

WHAT IS CLAIMED IS:

1. A hollow electrochemical cell for measuring a concentration of glucose in a blood sample, the hollow electrochemical cell comprising:
  - (a) at least one non-metal working electrode;
  - (b) at least one counter electrode or counter/reference electrode, wherein the working electrode and the counter electrode or counter/reference electrode are not coplanar and are separated by a distance of from about 20 to about 200 microns;
  - (c) a spacer interposed between the working electrode and the counter electrode or counter/reference electrode, wherein the spacer comprises a non-conductive polymeric material, and wherein the spacer and the electrodes define walls of the hollow cell; and
  - (d) a fluid permeable side-wall on at least one side of the hollow cell permitting entry of the sample into the hollow cell, wherein the hollow cell comprises an effective cell volume of less than 1.5 microliters.
2. The hollow electrochemical cell of claim 1, wherein at least one non-metal working electrode comprises a material selected from the group consisting of graphite, carbon, and carbon-filled plastic.
3. The hollow electrochemical cell of claim 2, wherein at least one counter electrode or counter/reference electrode comprises a metal substrate or a metal coated substrate.
4. The hollow electrochemical cell of claim 3, wherein the metal is selected from the group consisting of gold, silver, platinum, palladium, iridium, lead, and alloys thereof.
5. The hollow electrochemical cell of claim 4, wherein the metal comprises silver and wherein a reduced form of a redox species or an oxidized form of a redox species is contained within the sample, wherein the sample comprises chloride ions.
6. The hollow electrochemical cell of claim 5, wherein the fluid permeable side-wall comprises an opening.